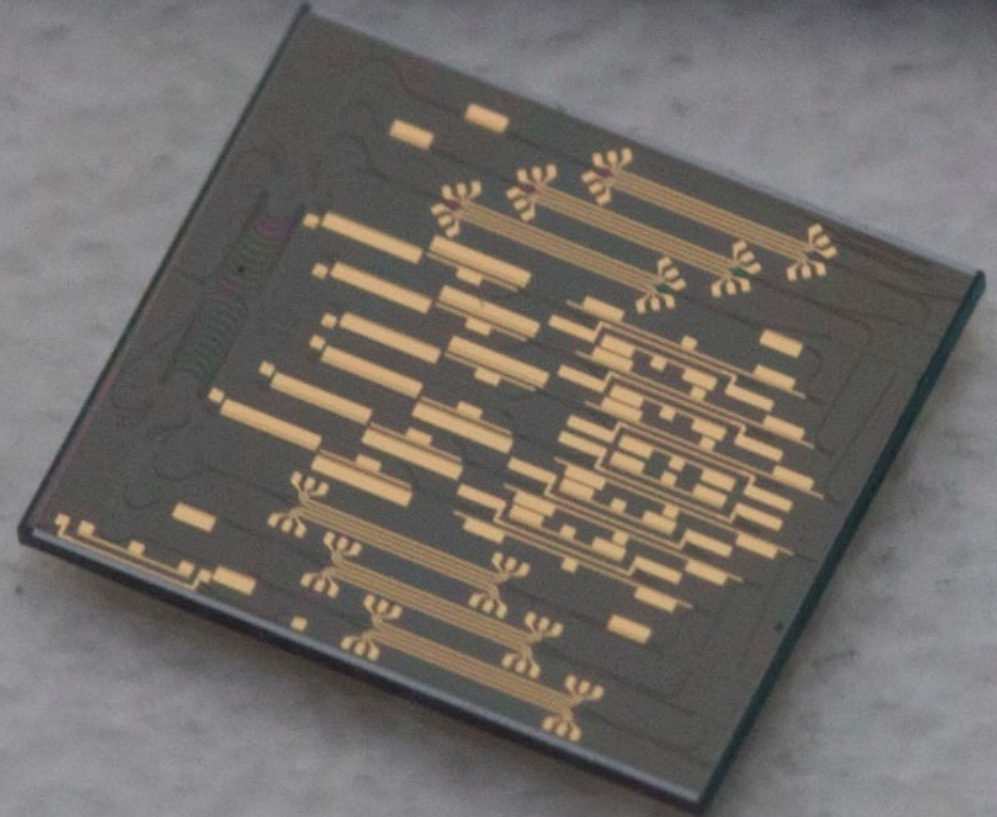
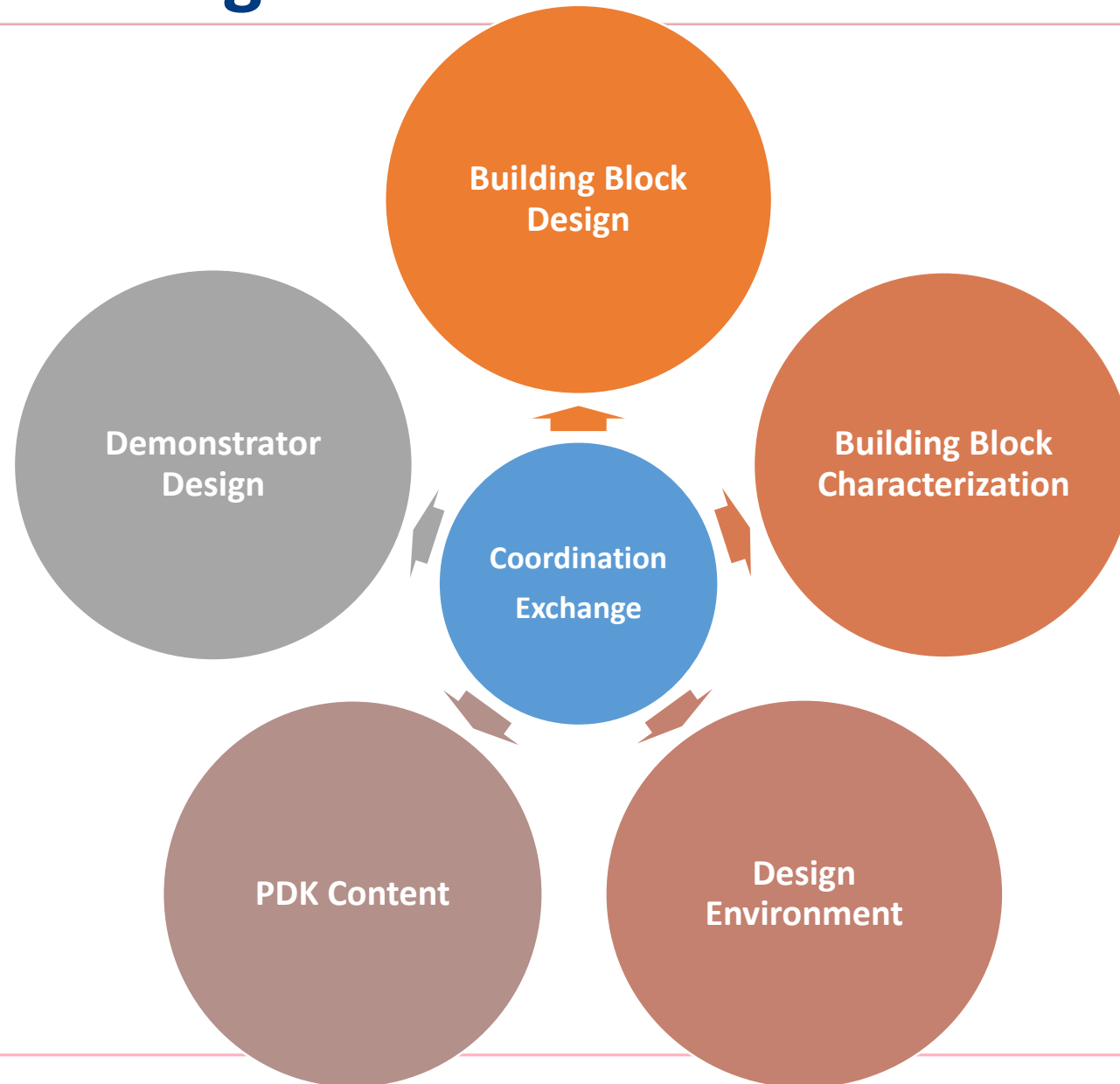


Work Package 3 Building Block Improvement

TU/e

29th August 2017

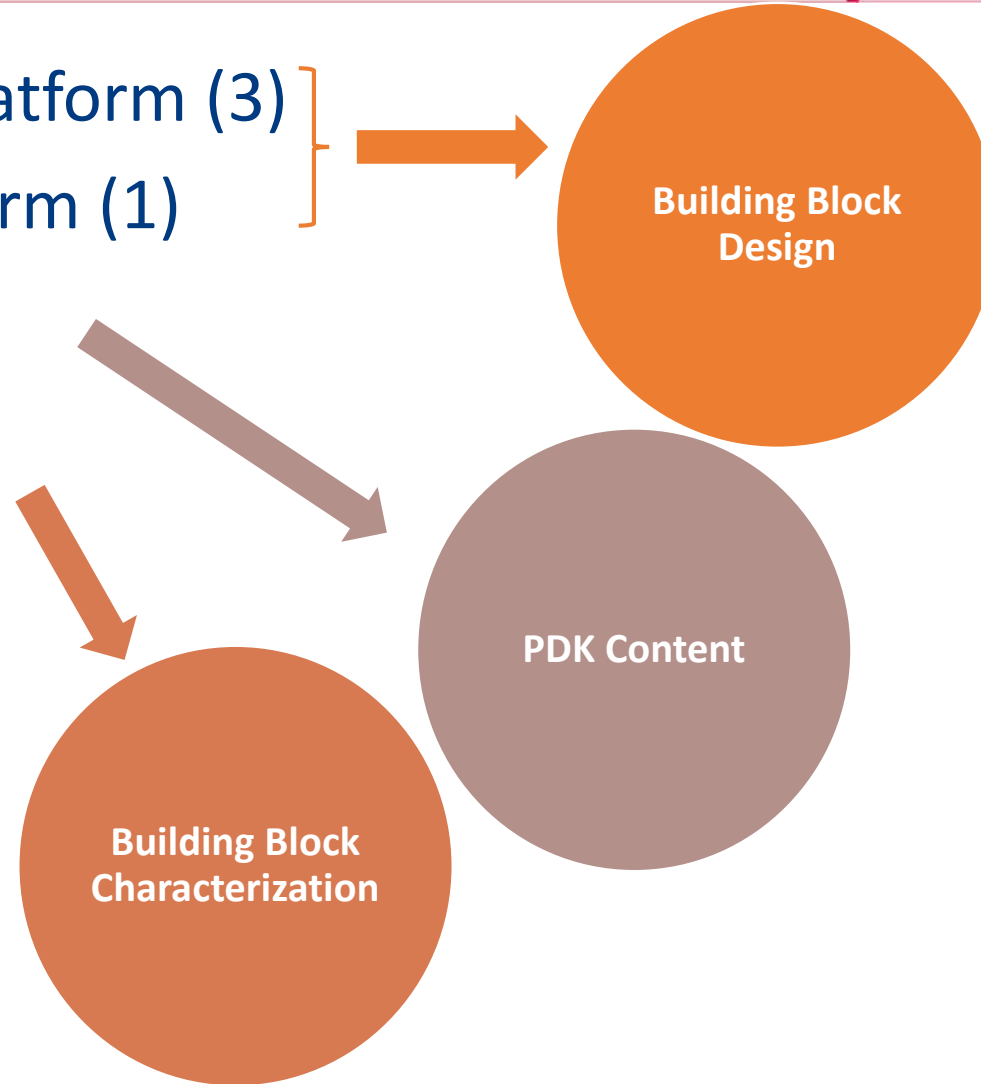




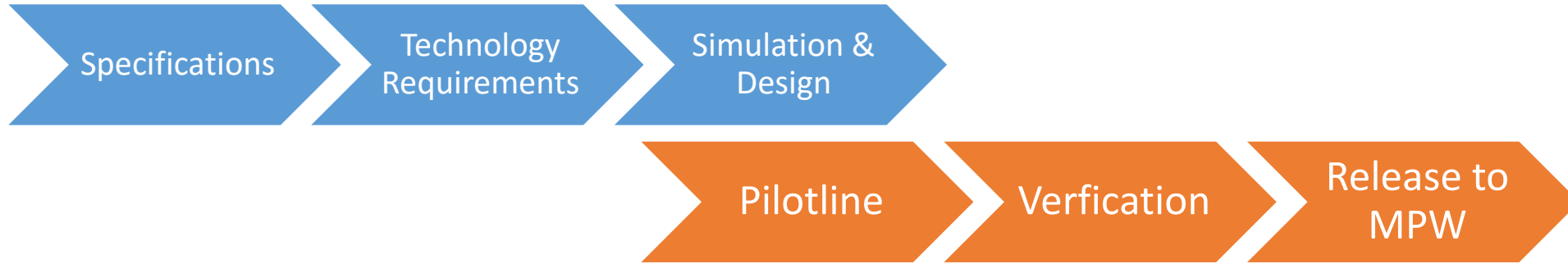
<i>WP 3.1</i>		<i>BB Design</i>	
WP3.1.M0	Technology and Design Concept	Weiming, Ronald	Dec-16
WP3.1.R0	Analysis and Design	Weiming, Ronald	Jun-17
WP3.1.M1	Mask Design Tape-out I	Weiming, Ronald	Jun-17
WP3.1.R1	BB Results I	Weiming, Ronald	Mar-18
WP3.1.M2	Mask Design Tape-out II	Weiming, Ronald	Sep-18
WP3.1.R2	BB Results II	Weiming, Ronald	Jun-19
<i>WP 3.2</i>		<i>PDK Content</i>	
WP3.2.M0	State of the PDK	Rui	Dec-16
WP3.2.M1	Definition of basic BB figure of merits	Rui	Mar-17
WP3.2.M2	Definition of composite BB FoM	Weiming	Mar-17
WP3.2.R0	Definition of measurement procedures	Weiming	Jun-17
WP3.2.R1	PDK upgrade with new advanced BB	Rui	Mar-18
WP3.2.R2	Compact Models	Rui	Jun-18
<i>WP 3.3</i>		<i>BB Characterization</i>	
WP3.3.R0	Design of Standard MPW BB test cell	Weiming	Mar-17
WP3.3.M0	Report on standard MPW BB cell results	Rui	Every MPW
WP3.3.R1	Design of composite BB test cell	Weiming	Sep-17
WP3.3.M1	Report on composite test cell results	Weiming	Mar-18
<i>WP 3.4</i>		<i>Design Environment</i>	
WP3.4.DF.R0	Design Flow document	Marcel	Mar-17
WP3.4.DF.R1	Improvement points	Marcel	Apr-17
WP3.4.DF.M0	Implementation of selected improvement points	Marcel	Jan-18
WP3.4.DF.R2	Final Design flow Document	Marcel	Sep-19
WP3.4.EF.R0	Execution Flow document	Ronald	May-17
WP3.4.EF.M0	Implementation of an Execution DB	Ronald	Mar-18
WP3.4.EF.R1	Final Execution Flow document	Ronald	Sep-19
WP3.4.PDA.M0	Development of PDAflow template	Marcel	Mar-17
WP3.4.PDA.M1	Implementation of first building block	Marcel	Apr-17
WP3.4.PDA.R0	Full documentation of template	Marcel	Mar-17
WP3.4.PDA.M2	Update of Smart and TU/e PDK	Marcel	Jun-18
WP3.4.DRC.R0	DRC requirement report	Marcel	May-17
WP3.4.DRC.R1	Documentation of DRC capability	Marcel	Aug-17
WP3.4.DRC.M0	DRC Implementation in PDKs	Marcel	Nov-17
WP3.4.DRC.R2	Implementation of new DRC functionality	Marcel	Aug-18

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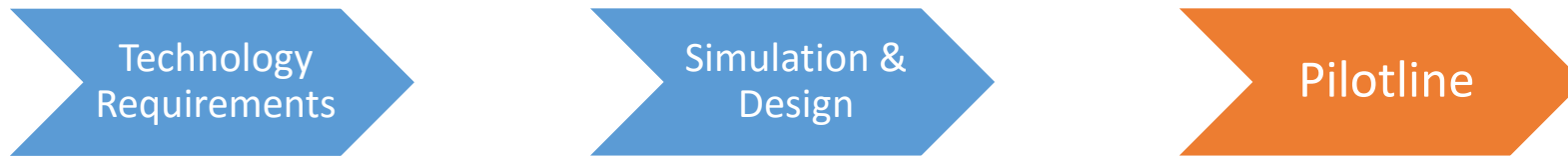
- Modulator Development for Platform (3)
- RF Line Development for Platform (1)
- Composite Building Blocks (1)
- MPW BB Test Cell (3)
- Measurement Automation (2)



Goal: Higher bandwidth for modulator building block
20 GHz, 40 GHz, 80 GHz



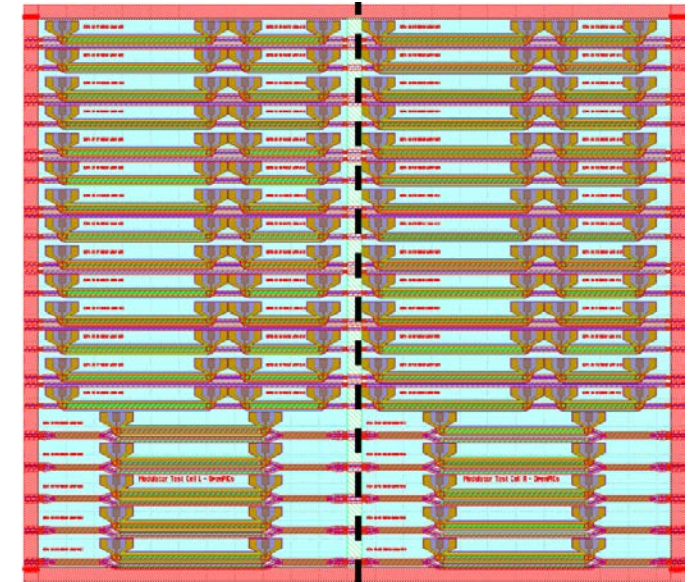
1st Step: Conventional CPW electrode



MQW material
More effective
EO modulation

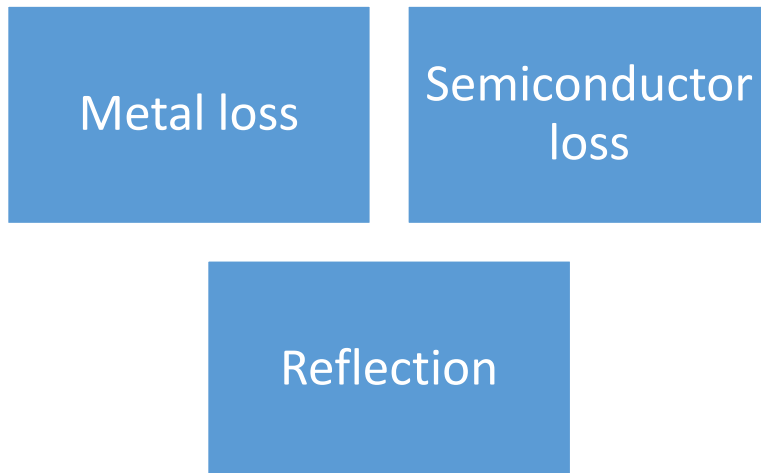
Range of CPW
dimensions

Parallel run
with MPW



Goal: Higher bandwidth for RF lines to bridge distances on PIC
20 GHz, 40 GHz, 80 GHz for lengths < 4-5 mm.

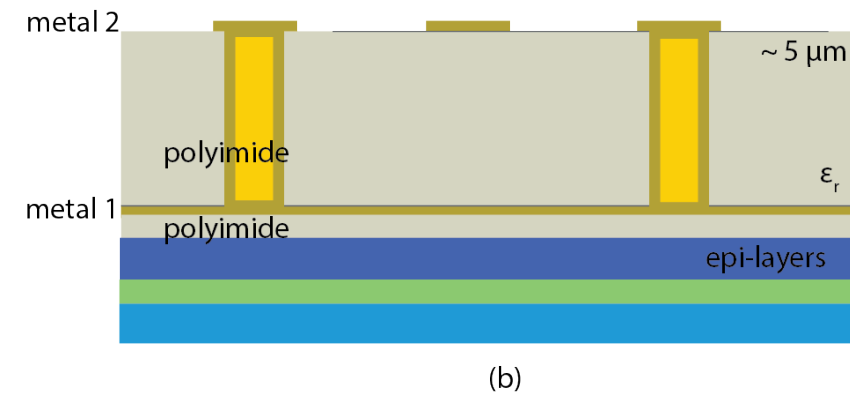
Limitations in Pilotline



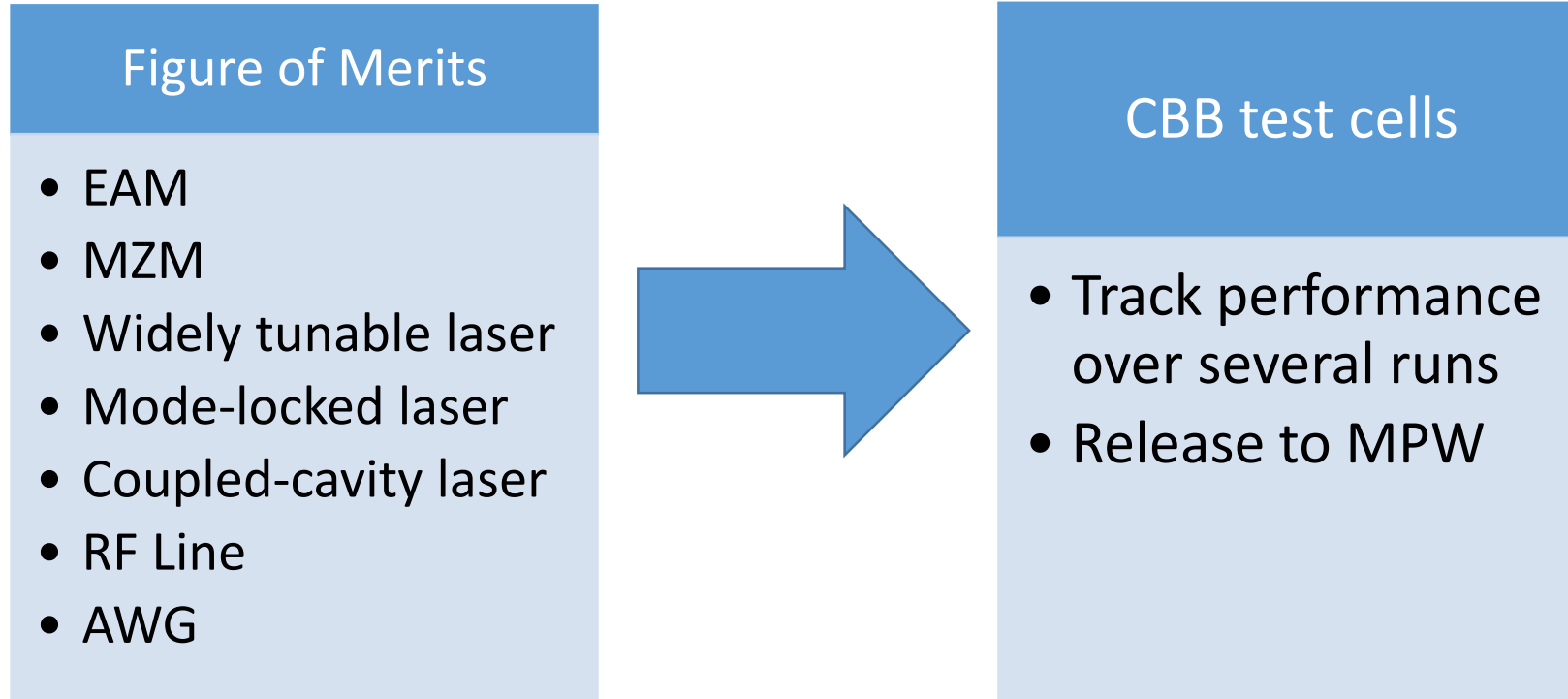
Parameter extraction

- Semiconductor parameter
- Metal parameter
- DC + RF
- Process resolution

Future Platform

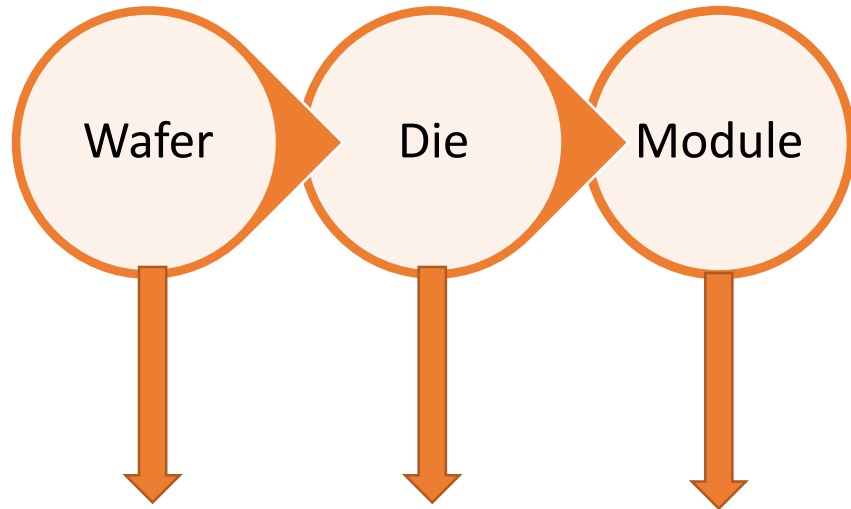


Goal: Enrich component libraries with recent developed composite building blocks



Goal: Acquire accurate, statistical data on basic BBs. Track those per run in an efficient way

Solution: Have standard BB test cells on each MPW. Capture figure of merits and track those

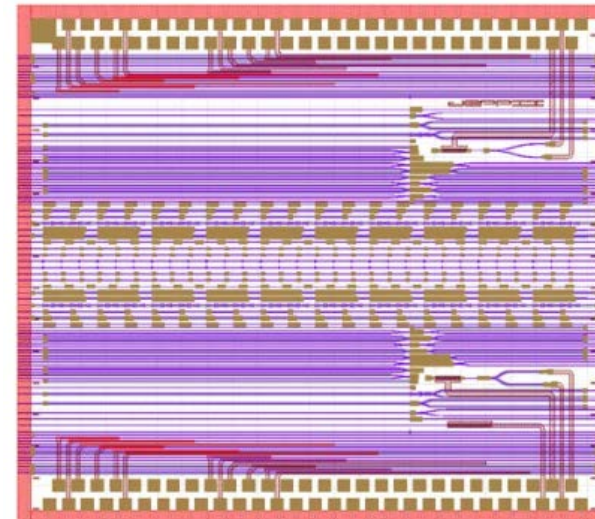


Automated wafer-level testing

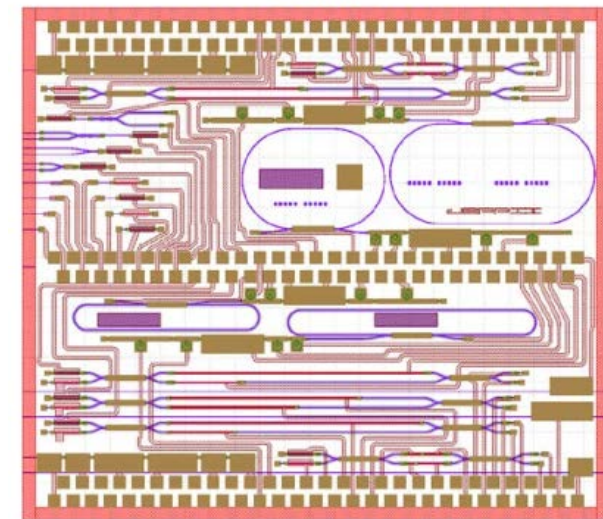
Automated die-level testing

Automated packaging & characterization

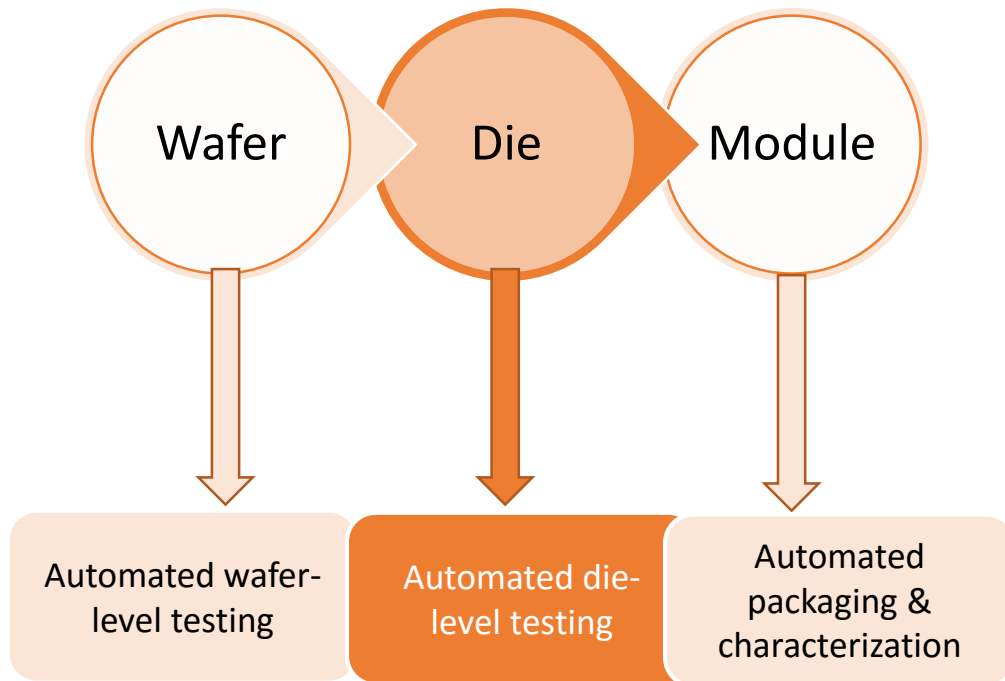
Cell 1



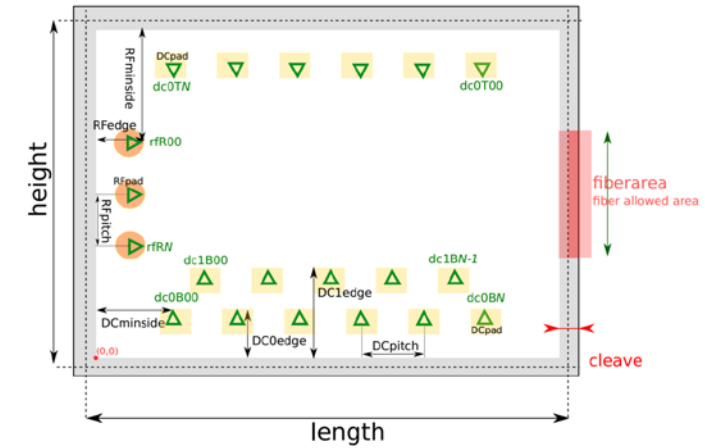
Cell 2



Goal: Perform fast, reliable automated measurements



Pad standard



Cell and measurement description

Scripted description files

Data exchange

Meas. Data description + meta data

Modulator Development



Track performance of 1st step MZMs

RF Line Development



Acquire material parameters
work on 2 level technology

Composite Building Blocks



cBB test cell for next run
Track performances

MPW BB Test Cell



Evaluate BB Test cells
Converge to automated testing

Measurement Automation



Automated die tester build-up
Compatibility with wafer prober